crown of different density of foliage, he counted the leaves falling into the hollow space and calculated by repeated measurements the average number of leaves of the whole tree and the average surface of them.

The loss by evaporation was measured at different hours of each day, from the 18th of May to 24th of October; this reduced the average loss for a square inch surface, and from this was calculated the average loss from all the leaves of the tree during the season.

Many minute precautions were taken, which to mention here is not necessary; but it may be remarked that when exposing the leaves for evaporation he suspended the twigs in the shade, and as the cut twigs during the experiment were deprived of any succor from the tree, the loss is to be considered as a minimum.

The intention was not to find the exact amount of transpiration, but to prove that during the season the tree evaporates considerably more water than it receives by rainfall, and so the method answers the purpose.—FRED. BRENDEL, *Peoria, Ill., 9th of June*, 1871.

ZOOLOGY.

SPAWNING OF THE GOOSE FISH (*Lophius Americanus*).—During the summer season the fishermen on the New England coast often notice a substance floating in the water, which they term "a purple veil" the precise nature of which has caused much speculation on their part, and which answers singularly well to its designation.

During a late cruise I encountered one of these veils, which presented the appearance of a continuous sheet of a purplish brown color, twenty or thirty feet in length and four or five in width, composed of a mucous substance which was perfectly transparent, to which, as a whole, a purple color was imparted by the presence of specks distributed uniformly throughout the mass to the number of about thirty or more to the square inch. I was unable to ascertain whether this was actually a simple sheet or a collapsed tube as the material was so extremely slippery that it was impossible to retain it in a position where it could be easily examined. With much effort we succeeded in bringing a portion upon the deck of our boat, when it ran out almost immediately through the scupper holes. To our surprise on closely examining the specks, which gave color to the mass, we found them to consist of embryonic fish, moving vigorously in their envelope but without

any appreciable latitude of motion, or change of relative position to each other.

Portions of this veil, with its contents were brought home, hoping that we might be able to follow the successive transformations of this embryo, and thereby determine the species; but although the water in which they were kept was frequently changed they very soon died.

It was, of course, evident that nothing but a very large fish could lay so heavy a sheet of mucus, covering as it did an area of not less than from sixty to one hundred square feet, and I am informed that they are sometimes found even much larger than this. Allowing one hundred square feet of surface, and an average of thirty feet to the square inch, the sheet in question would contain four hundred and thirty-two thousand eggs, an estimate decidedly within the mark.

When this specimen was first selected, we had overboard at the stern of our boat a trawl net about thirty feet in length, of a tan color trailing behind, and the veil was first seen floating near it, and so entirely similar in general appearance and color, as to remain for some time without attracting special attention, till one end floated off from that of the net, creating the impression that the latter had been torn longitudinally into strips by some unknown accident.

Finding myself unable to ascertain anything about the true character of this spawn I sent specimens of it to Mr. Alexander Agassiz, who informed me that it belonged to the goose fish, and that he had studied out the development of the species from its earliest stage of growth to maturity. — S. F. Baird.

How Living Toads May Occur in Limestones. — It is well known to all naturalists that none of the existing species of animals were in existence during either the paleozoic or mesozoic periods, and hence the reported occurrence of frogs or toads in a torpid but living state, embedded in solid limestone strata, has not been generally credited by scientific men as worthy of serious consideration. Nevertheless it is not uncommon to hear persons assert that such occurrences have taken place within their own personal knowledge, and it seems hardly probable that such reports should arise in various and distant localities, without some apparent foundation in fact.

In the winter of 1853 the writer was informed by a gentleman

of undoubted veracity, that in laying the foundation walls for a warehouse in the town of Naples on the Illinois river, a living toad was found entombed in the limestone, which on coming in contact with the atmosphere soon resumed its wonted activity, though torpid when first discovered.

Having occasion to pass through Naples a few days afterwards, I examined the walls of the buildings to see if I could discover any clue that might serve to explain so improbable an occurrence. I found the walls constructed out of the brown dolomite of the lower St. Louis, or Warsaw limestone, and observed that the rock had been more or less fissured, the fissures cutting the strata at right angles to the lines of bedding, and varying from a mere line to an inch or more in width. Many of these fissures had been filled wholly or partially with a deposit of stalagmite, and in some places the exposed surface of the rock had been coated for an inch or more in thickness with the same material.

These facts seemed to me to afford an easy explanation of the reported phenomena; the toad had sought shelter in one of these crevices as his home for the winter, where he remained in a dormant condition, until the constant dripping of water holding carbonate of lime in solution sealed him in completely. Here he remained until he was released by the hammer of the workman, which broke the crust of his stony mausoleum, and restored him to liberty. Persons who had paid no attention to the manner in which limestones are formed, would make no distinction between the original dolomite which was formed beneath the ocean, eons of ages ago, and the incrusting stalagmite whose formation is still going on, and to them it would be all alike, *solid limestone*. As these comparatively recent calcareous deposits are of very common occurrence, it would not be surprising that living batrachians should be found in them, even more frequently than they are.

It would be a matter of considerable scientific interest, to determine, were it possible, how long animal life could be preserved under such conditions; and if the functions of life are so completely suspended during hibernation, as to cause no waste of tissue, I see no reason why it might not be preserved for an indefinite period, though it is by no means necessary to suppose in the case cited above, that any long period had elapsed after the entombment of the animal. — A. H. WORTHEN, *Springfield, Ill.*

YOUNG WORMS FEEDING ON EGGS OF THE SAME BROOD.—In a recent biography of the celebrated Swiss naturalist Claparède, by M. H. de Saussure, published in the "Bibliotheque Universelle," he is said to have made the strange discovery that among the eggs contained in great numbers in the capsule secreted by the worm (Clitellum) one only transforms into an embryo. This rapidly increases in size, since as soon as its mouth is formed, it devours the surrounding eggs, which thus serve as a reservoir of food. This phenomenon is analogous to that which has been described in certain gastropodous molluscs such as Purpura, etc.

BLACK VARNISHED INSECT PINS.—M. Peyerimhoff advocates the use of black varnished insect pins instead of silvered brass pins, which corrode in the body of the insects, especially of Micro-Lepidoptera, very soon disfigure them, and eventually utterly destroy them. The editor of "Petites Nouvelles Entomologiques," thinks that varnished brass pins may last somewhat longer, but that these will eventually perish in the same way. "We believe that platinum wire is perfectly indestructible, and open to none of the objections which are made to brass. Certainly nothing but platinum will therefore be used for very rare specimens."

HYMENOPTEROUS PARASITES IN A BEETLE.—Wishing to compare certain muscles of locomotion of butterflies with those of some other insect, I selected from a bottle of alcoholic specimens a species of Pimelia which I had collected in Egypt—a large, compact, very hard-shelled beetle, with elytra connate to the last degree. On opening the beetle from above and removing the mass of nearly or quite developed eggs which lay on the upper surface, I noticed some vermiform bodies lying free in the cavity of the abdomen. Examining them carefully, my astonishment was great on discovering that they were hymenopterous larvæ, closely resembling those of certain species of Braconidæ which are so easily reared from some lepidopterous larvæ. I had detected several when I was called away, and was afterwards unable to distinguish from the dried up mass how many larvæ it might have contained. Have hymenopterous larvæ ever before been found parasitic in the abdominal cavity of a perfect hexapod? Least of all should we expect to find them in such hard-shelled Coleoptera? How and

when do they emerge from their host, and do they interfere with its vital functions before the eggs are deposited? The beetle was one of a large colony of lively specimens captured beneath the ruined walls of an Arab hovel at Ismailia on the Suez canal. The specimens have been sent to the editors of the AMERICAN NATURALIST. — SAMUEL H. SCUDDER.

[It is well known in Europe that several species of Conops, a wasp-like dipterous fly, live in the larva state in the abdomens of adult humble bees. We have reared a species also from the abdomen either of *Bombus vagans* or *B. fervidus*. — EDS.]

MADNESS IN A HORSE. — In the "Zeitschrift für Parasitenkunde" published in Berlin, a remarkable instance is recorded of madness in a horse, caused presumably by the bite of a mad dog. The horse was brought to the hospital of the Royal Veterinary School at Berlin, having refused its food for two days, and exhibited extraordinary wildness and propensity to bite, not only other horses and inanimate objects, but also its own body, and had already by this means broken several of its teeth, and inflicted severe injuries on its mouth. When confined in a stall in the hospital, it continued to exhibit this propensity to a terrible extent, but in a fitful manner; in the intervals of the paroxysms it stood in a bewildered state, and would sometimes suddenly fall as if struck by lightning, then give a violent bite to one of its hind feet, then as suddenly spring up, staggering. The loss of blood caused it to become gradually weaker, and in the evening of the day on which it was admitted, it expired without any death-struggle. Except the outward injuries, and some interior swelling and inflammation, the organs were found to be sound after death. — A. W. B.

ANTHROPOLOGY.

WHERE ARE THE BONES OF PREHISTORIC MEN? — In answer to this inquiry, M. W. Pengelly states in the "Quarterly Journal of Science" that their bones may be more subject to decay than the bones of other animals, citing the experiments of Dr. Lindley who "placed in water, in a tank, one hundred and seventy-seven specimens of various plants belonging to all the more remarkable natural orders, including representatives of all those which are constantly present in the coal measures, and also those which are